

SCIENCE 3D

CROCODILE COUNTRY

SCIENCE PERFORMANCE EXPECTATIONS AND DISCIPLINARY CORE IDEAS

In the Elementary School Mission (NGSS Grade 5), students will address the general topics below. For a complete list of NGSS standards covered in each segment of the Mission, continue reading after the general standards. *Note: Be sure to complete the **Mission Reader** and **Mission Research** before viewing the full **Mission Video**. Explore [How to Use Science 3D](#) to get suggestions on how to pace the Mission and options for the order of activities. Math and Language Arts standards will be added shortly.*

- In the **Mission Reader**, *Crocodile Country*, students will learn about crocodiles and their relatives. They'll also explore life cycles, animal behavior, erosion and deposition, how water moves between the biosphere, atmosphere, and geosphere, interactions of body systems and how humans can impact wildlife populations. They will also learn about force.
- During **Mission Research**, students will enhance their knowledge of the properties of matter and explore the mathematical relationship between force, mass, and acceleration. Then, they will explore the force of gravity and balanced and unbalanced forces. They will make calculations, draw graphs, and make conclusions based on these data.
- In the **Science Mission**, students will explore how the seasons and the size of crocodiles affects their diets. They will decide if crocodiles are carnivores or omnivores. Finally, students will investigate where crocodiles are found in different seasons. They will synthesize the information they have to determine when and where crocodiles might be a risk to people, livestock, and pets. In this activity, students will develop hypotheses and predictions and test them by analyzing data. They will make bar graphs and pie charts and interpret graphs and maps. An optional activity will have students explore how crocodiles and their habitat might be affected by invasive species.
- In the **STEM Project**, students will explore the properties of matter and how to measure them. Next, they will use this understanding to create designs for a crocodile trap used to relocate problem crocodiles. They will identify places where a trap might fail and go through an iterative process to improve their design.
- The **Explore Your Backyard** activity has students explore water. Topics include how society uses water, how students use water in their daily lives, and how they can reduce their use of water. Then, they observe a water habitat and record how it might be impacted by humans. An alternate activity has students explore how invasive species modify local ecosystems.

SCIENCE/ENGINEERING AND DESIGN DISCIPLINARY CORE IDEAS AND PERFORMANCE EXPECTATIONS

MISSION READER

LS2.B	Cycles of matter and energy transfer in ecosystems
5-ESS2-1	Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and or atmosphere interact. The reader discusses how water flows from atmosphere to geosphere to biosphere and back to atmosphere.
ESS2.C	The roles of water in Earth's surface processes.
5-ESS3-1	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
ESS3.C	Human impacts on earth systems.
5-PS3-1	Use models to describe that energy in animals' food was once energy from the sun.
LS1.C	Organization for matter and energy flow in organisms.

MISSION RESEARCH

PS1.A	Structure and properties of matter: measurements can be used to identify materials.
5-PS2-1	Support an argument that the gravitational force exerted by Earth is directed. down.
PS2.B	Types of interaction: gravitational force of Earth acting on objects.

SCIENCE MISSION

LS2.B	Cycles of matter and energy transfer in ecosystems.
ESS3.C	Human impacts on earth systems.
LS1.C	Organization for matter and energy flow in organisms.

STEM PROJECT

5-PS1-3	Make observations and measurements to identify materials based on their properties.
PS1.A	Structure and properties of matter: measurements can be used to identify materials.
3-5-ETS1-1	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
ETS1.A	Defining and delimiting engineering problems.
3-5-ETS1-2	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
ETS1.B	Developing possible solutions: communicating with peers about proposed solutions is important and can improve design.
3-5 ETS1-3	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved. Identifying failure points not included. If students build their own physical models then this could be fully explored.
ETS1.C	Optimizing the design solution.

EXPLORE YOUR BACKYARD

5-ESS3-1	Obtain and combine information about ways individual communities use science ideas to protect the Earth's Resources and environment.
ESS3.C	Human impacts on Earth systems.

CROSS CUTTING CONCEPTS

Patterns: [Reader](#), [Mission Research](#), [Science Mission](#), [STEM Project](#), [Explore Your Backyard](#)
 Cause and effect: mechanisms and predictions: [Reader](#), [Mission Research](#), [Science Mission](#), [STEM Project](#), [Explore Your Backyard](#)
 Scale, proportion and quantity: [Mission Research](#), [Science Mission](#), [STEM Project](#), [Explore Your Backyard](#)
 System and system models: [Science Mission](#), [STEM Project](#), [Explore Your Backyard](#)
 Energy and matter: [Reader](#), [Science Mission](#)
 Structure and function: [Reader](#), [Science Mission](#), [STEM Project](#)
 Stability and change: [Reader](#), [Mission Research](#), [Science Mission](#), [STEM Project](#), [Explore Your Backyard](#)

CONNECTION TO ENGINEERING, TECHNOLOGY AND APPLICATIONS OF SCIENCE

Interdependence of science, engineering and technology: [Reader](#), [STEM Project](#), [Explore Your Backyard](#)
 Influence of science, engineering and technology on society and the natural world: [Reader](#), [Explore Your Backyard](#)

CONNECTION TO NATURE OF SCIENCE

Scientific investigations use a variety of methods: [Reader](#), [Science Mission](#)
 Scientific knowledge is based on empirical evidence: [Reader](#), [Mission Research](#), [Science Mission](#), [STEM Project](#), [Explore Your Backyard](#)
 Scientific knowledge is open to revision in light of new evidence: [Reader](#), [Science Mission](#)
 Science models, laws, mechanisms and theories explain natural phenomena: [Reader](#), [Mission Research](#), [Science Mission](#)
 Science is a way of knowing: [Reader](#), [Mission Research](#), [Science Mission](#), [STEM Project](#), [Explore Your Backyard](#)
 Scientific knowledge assumes an order and consistency in natural systems: [Reader](#), [Mission Research](#), [Science Mission](#), [STEM Project](#)
 Science is a human endeavor: [Reader](#), [Mission Research](#), [Science Mission](#), [STEM Project](#), [Explore Your Backyard](#)
 Science addresses questions about the natural and material world: [Reader](#), [Mission Research](#), [Science Mission](#), [STEM Project](#), [Explore Your Backyard](#)

SCIENCE AND ENGINEERING PRACTICES

Asking questions and defining problems: [Reader](#), [Mission Research](#), [Science Mission](#), [STEM Project](#), [Explore Your Backyard](#)
 Developing and using models: [Mission Research](#), [Science Mission](#), [STEM Project](#)
 Planning and carrying out investigations: [Science Mission](#), [STEM Project](#), [Explore Your Backyard](#)
 Analyzing and interpreting data: [Mission Research](#), [Science Mission](#)
 Using mathematics and computational thinking: [Mission Research](#), [Science Mission](#)
 Constructing explanations and designing solutions: [Mission Research](#), [Science Mission](#), [STEM Project](#), [Explore Your Backyard](#)
 Engaging in argument from evidence: [Mission Research](#), [Science Mission](#), [STEM Project](#), [Explore Your Backyard](#)
 Obtaining, evaluating and communicating information: [Mission Research](#), [Science Mission](#), [STEM Project](#), [Explore Your Backyard](#)